ELECTRONIC INNOVATIONS IN ACTION
TUBES

—PRODUCT INFORMATION—

Compactron Beam Pentode

6MH6

FOR TV HORIZONTAL-DEFLECTION AMPLIFIER APPLICATIONS

- COLOR TV TYPE
- 38.5 WATTS PLATE DISSIPATION
- 280 VOLTS B +
- 500 MILLIAMPERES DC CATHODE CURRENT
- OVER 1 AMPERE PEAK CURRENT

The 6MH6 is a compactron beam–power pentode primarily designed for use as the horizontal–deflection amplifier in color television receivers. It is characterized by having a very low knee with a very high peak current of over an ampere. This results in a basic capability to scan 90–degree large screen color picture tubes at 26 KV from 280–volt power supplies. Its low knee minimizes "snivets" without the necessity of supplying special voltages to the beam plates.

GENERAL

ELECTRICAL

Cathode–Coated Unipotential
Heater Characteristics and Ratings

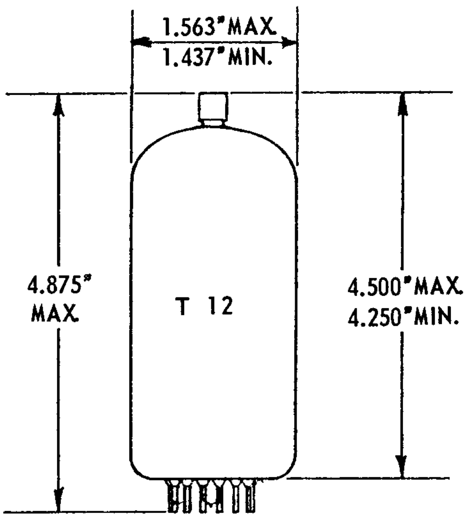
Heater Votage, AC or DC *	6.3 ± 0.6	VOLTS
Heater Current •	2.65	Amperes
Direct Interelectrode Capacitances, approximate ♦		
Grid Number 1 to Plate: (g1 to p)	1.0	pf
Input g1 to (h+k+g2+b.p.)	40	pf
Output: p to (h+k+g2+b.p.)	20	pf

MECHANICAL

Operating Position – Any
Envelope – T-12, Glass
Base – E12–74, Button 12 Pin
Top Cap– C1–1, Small
Outline Drawing – EIA 12–136

Maximum Diameter	1.563	Inches
Minimum Diameter	1.437	Inches
Maximum Over–all Length	4.875	Inches
Maximum Seated Height	4.500	Inches
Minimum Seated Height	4.250	Inches

PHYSICAL DIMENSIONS

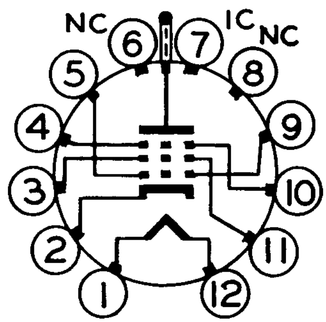


EIA 12–136

TERMINAL CONNECTIONS

Pin 1 – Heater
Pin 2 – Cathode
Pin 3 – Grid–Number 2 (Screen)
Pin 4 – Beam Plates
Pin 5 – Grid–Number 1
Pin 6 – No Connection
Pin 7 – Internal Connection (Do not use)
Pin 8 – No Connection
Pin 9 – Grid–Number 1
Pin 10– Beam Plates
Pin 11– Grid–Number 2 (Screen)
Pin 12– Heater
Cap – Plate.

BASING DIAGRAM



EIA 12GW

MAXIMUM RATINGS

HORIZONTAL-DEFLECTION AMPLIFIER SERVICE▲— DESIGN-MAXIMUM VALUES UNLESS OTHERWISE STATED

Peak Positive Pulse Plate Voltage	8000	Volts
Positive DC Beam Plate Voltage¶	50	Volts
Screen Voltage	275	Volts
Peak Negative Grid-Number 1 Voltage	300	Volts
Plate Dissipation□ (Absolute-Maximum Value)	38.5	Watts
Screen Dissipation	7.0	Watts
DC Cathode Current	500	Milliamperes
Peak Cathode Current	1750	Milliamperes
Heater-Cathode Voltage		
Heater Positive with respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with respect to Cathode		
Total DC and Peak	200	Volts
Grid-Number 1 Circuit Resistance§		
With Feedback-Type High Voltage Regulation	1.2	Megohms
With Shunt-Type High Voltage Regulation (Switching Mode)	2.2	Megohms
Beam Plate Circuit Resistance¶	10000	Ohms
Bulb Temperature⊕	275	°C

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Plate Voltage	7000	45	60	175	Volts
Beam Plates Connected to Cathode at Socket					
Screen Voltage	175	160	110	110	Volts
Grid-Number 1 Voltage	---	0	0	-21	Volts
Plate Resistance, Approximate	---	---	---	6000	Ohms
Transconductance	---	---	---	14000	Micromhos
Plate Current	---	1100†	760†	125	Milliamperes
Screen Current	---	110†	42†	3.3	Milliamperes
Grid-Number 1 Voltage, Approximate					
Ib = 1.0 Milliamperes	160	---	---	-40	Volts
Triode Amplification Factor‡	---	---	---	4.0	

MINIMUM RECOMMENDED GRID DRIVE

Peak Positive Pulse Plate Voltage	6000	7000	Volts
Peak Negative Grid-Number 1 Voltage for Eg2 = 150 Volts	210	230	Volts
Peak Negative Grid-Number 1 Voltage for Eg2 = 200 Volts	235	260	Volts

NOTES

- Publication of these data does not obligate the General Electric Company to manufacture a tube with these characteristics.

* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

● Heater current of a bogey tube at Ef=6.3 volts.

♦ Without external shield.

▲ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

□ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

¶ Resistance up to 10,000 ohms is permitted providing the positive beam plate voltage does not ecceed the rated value. Bypassing the resistor in the beam plate circuit is not recommended,

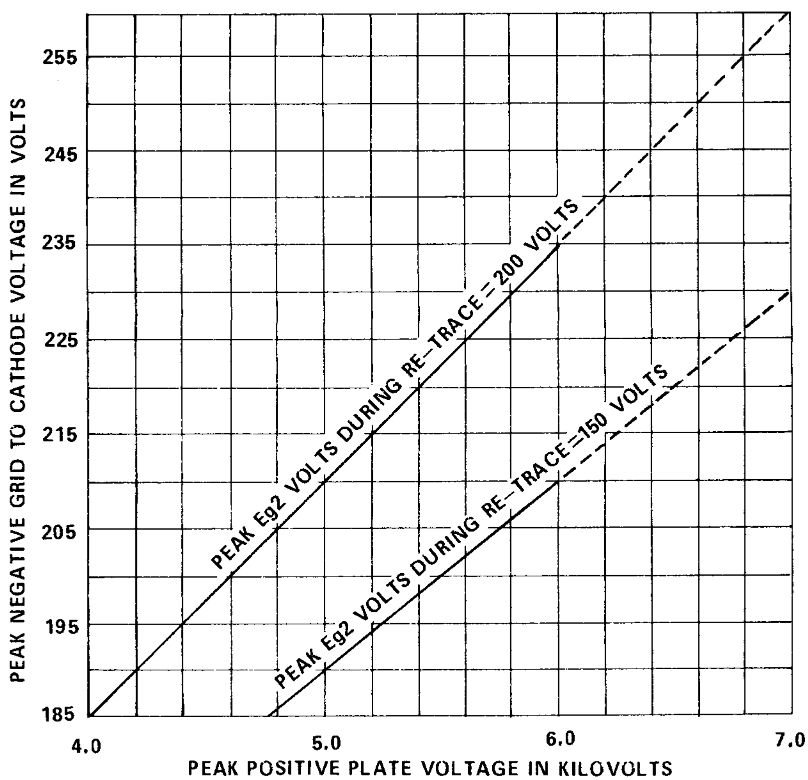
§ The circuit design has to be such that negative control grid currents up to 5 microamperes do not have any detrimental effect upon tube adjustment or circuit performance. Care should be taken so that the limiting values for plate dissipation, screen dissipation, and cathode current are not exceeded with 5 microamperes grid current.

⊕ Measured with an infrared themometer, Ircon Model 700 BC or equivalent.

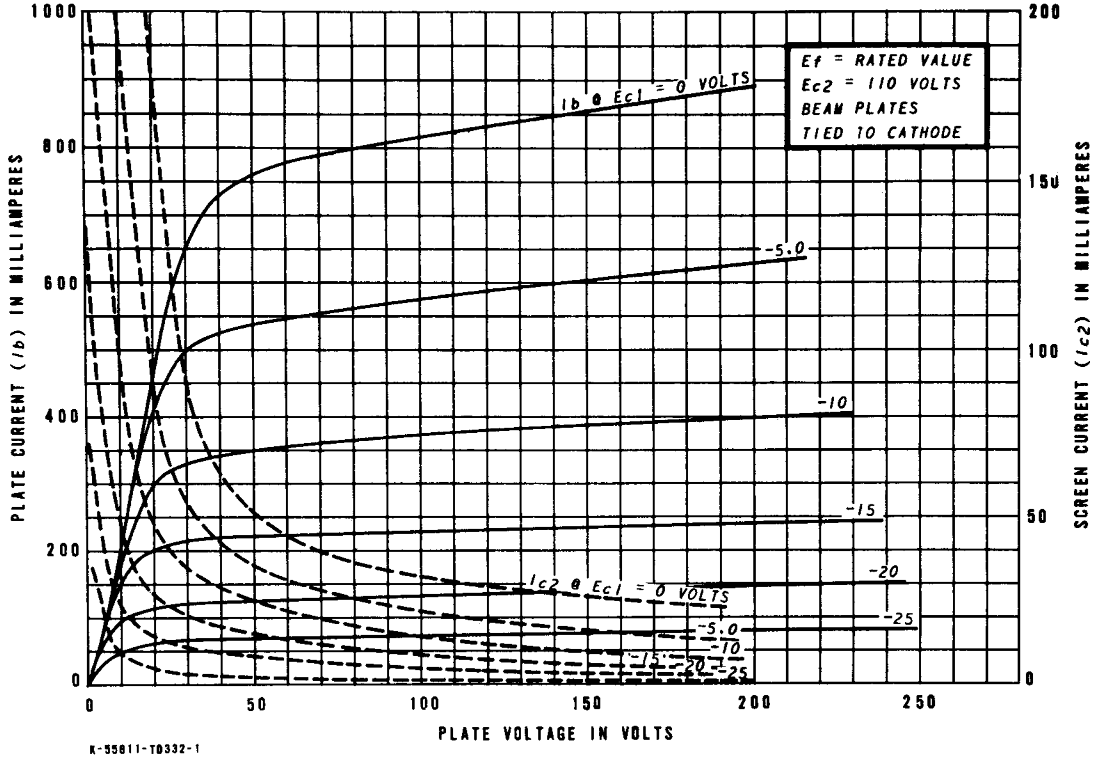
† Values measured by a method involving a recurrent waveform such that the plate and screen dissipation will be kept within rating in order to prevent damage to the tube.

‡ Triode connection (screen tied to plate) with Eb=Ec2=175 volts, and Ec1= -21 volts.

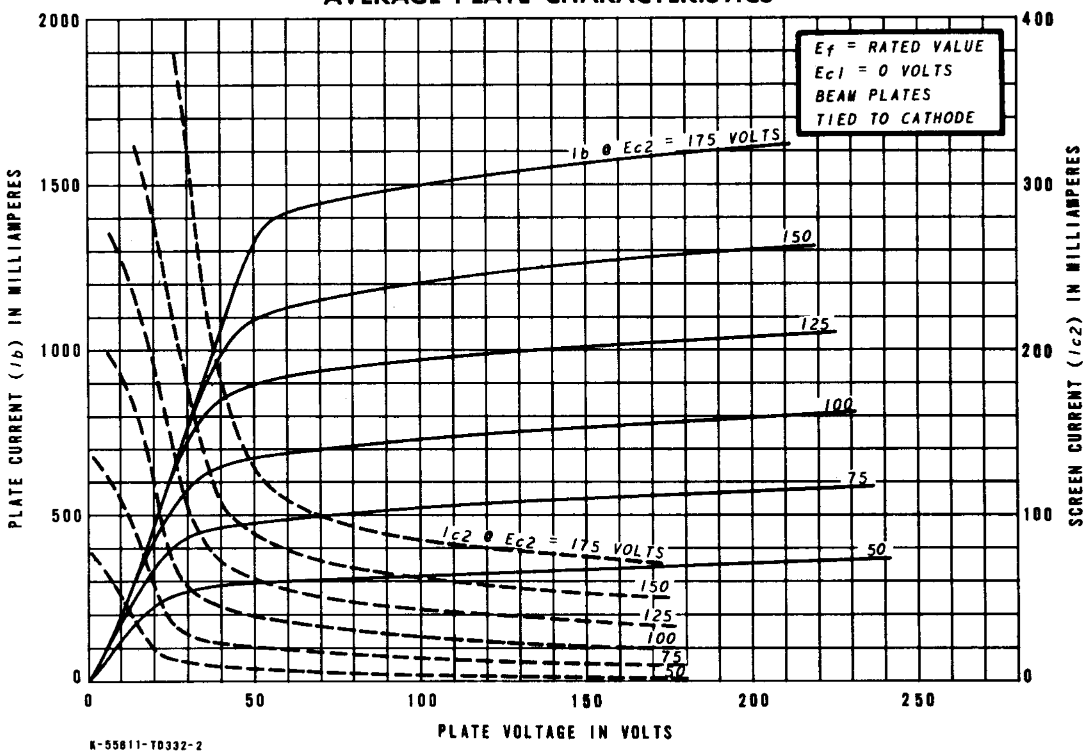
RECOMMENDED MINIMUM PEAK NEGATIVE GRID VOLTAGE vs PEAK POSITIVE PULSE PLATE VOLTAGE



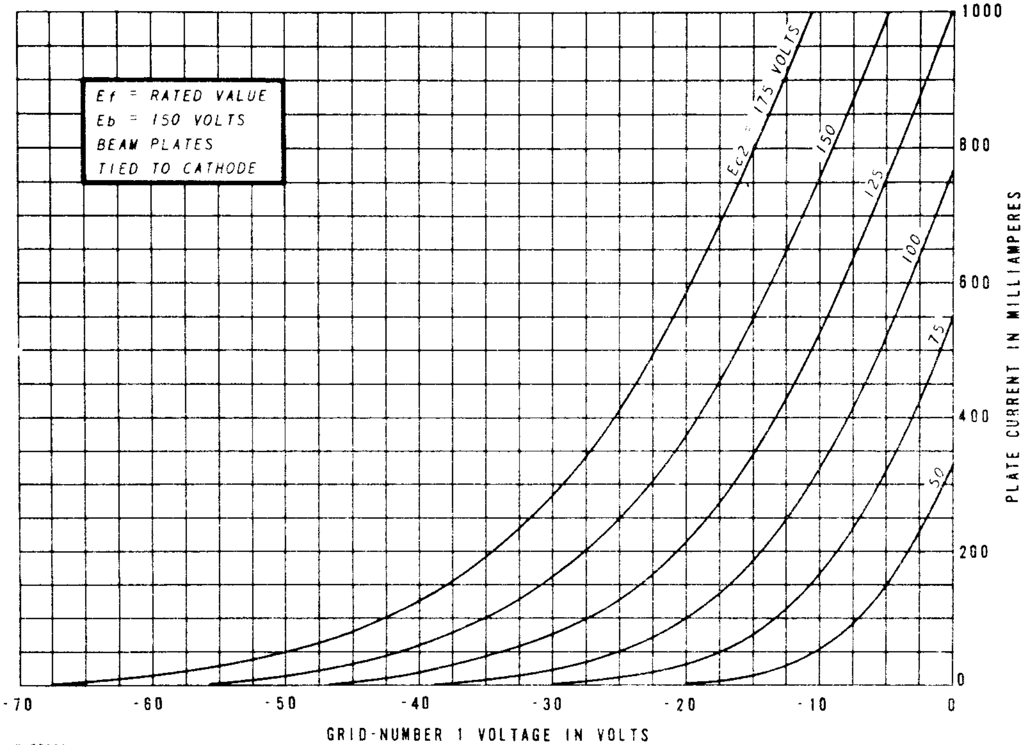
AVERAGE PLATE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS

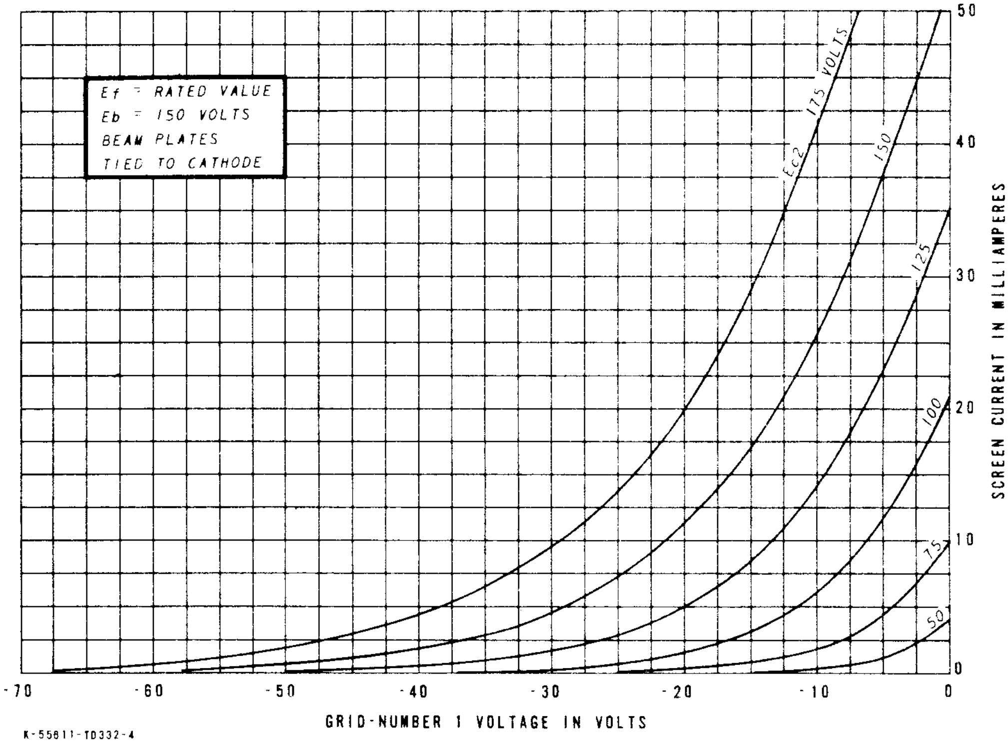


AVERAGE TRANSFER CHARACTERISTICS



K-55611-TD332-3

AVERAGE TRANSFER CHARACTERISTICS



K-55611-TD332-4

TUBE PRODUCTS DEPARTMENT

GENERAL ELECTRIC

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